Gunners Lake

Sediment Removal by Hydraulic Dredging and Riser Retrofit

November 7, 2013 Public Meeting
Sidney Kramer Upcounty Regional Services Center

Montgomery County Department of Environmental Protection
Watershed Management Division

Department of Environmental Protection
Montgomery County Maryland

Today's Agenda

- Montgomery County background
- What is a Watershed & Runoff?
- Intro to Stormwater and the MS4 Program
- Project Overview
- Project Objectives
- Project Impacts and Benefits
- Design and Permitting Timeline
- What to Expect During Construction

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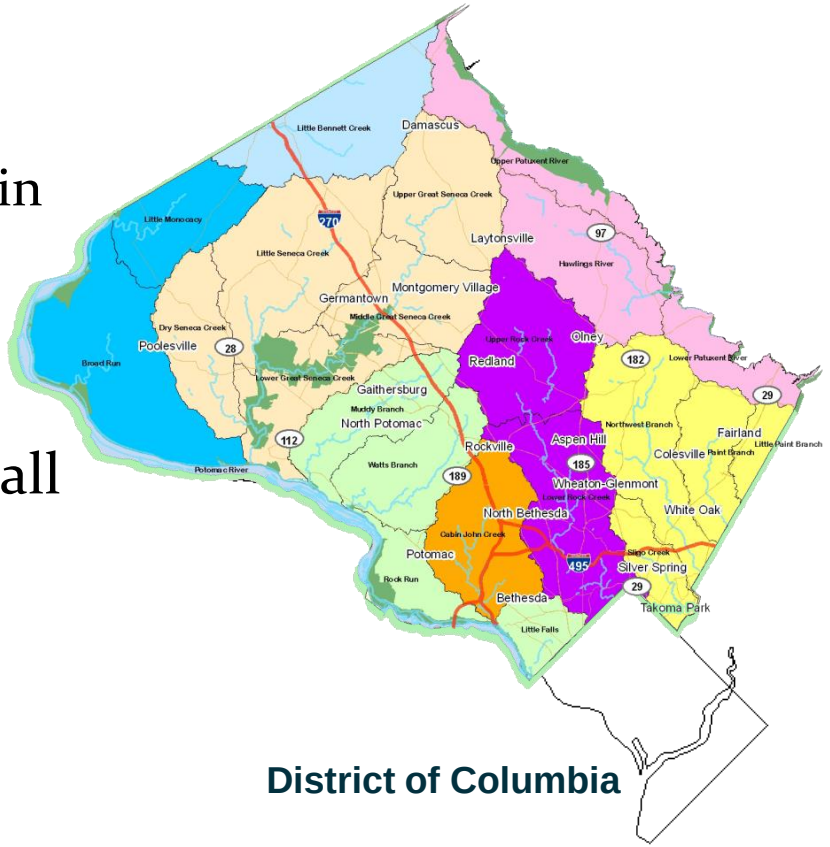
Montgomery County, MD

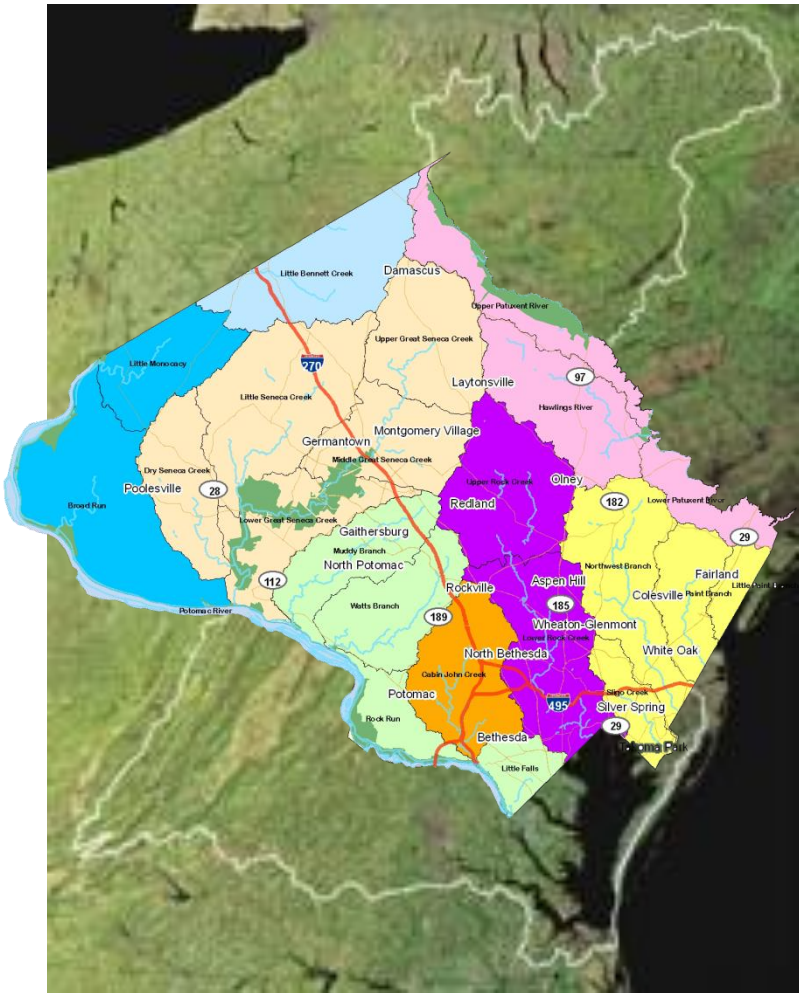
- 500 sq. miles
- 1,000,000 people
  - Second only to Baltimore City within Maryland in average people per square mile
  - 184 languages spoken
- About 12% impervious surface overall
  - About the size of Washington DC
- Over 1,500 miles of streams
- Two major river basins:
  - Potomac
  - Patuxent
- Eight local *watersheds*

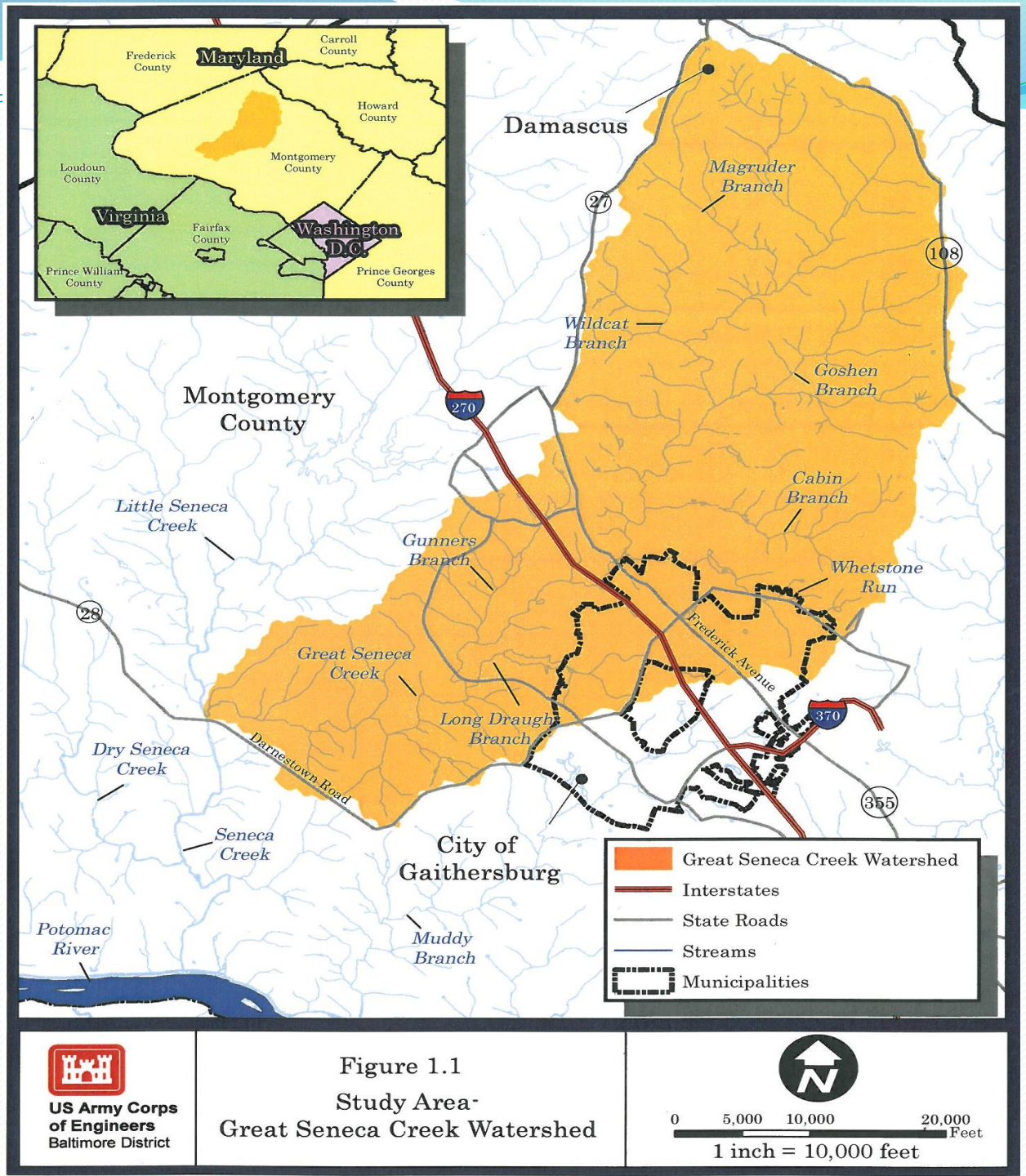


Impervious: Not allowing water to soak through the ground.

What is a Watershed?

- A ***watershed*** is an area from which the water above and below ground drains to the same place.
- Different scales of watersheds:
  - Chesapeake Bay
  - Eight local watersheds
  - Neighborhood (to a storm drain)





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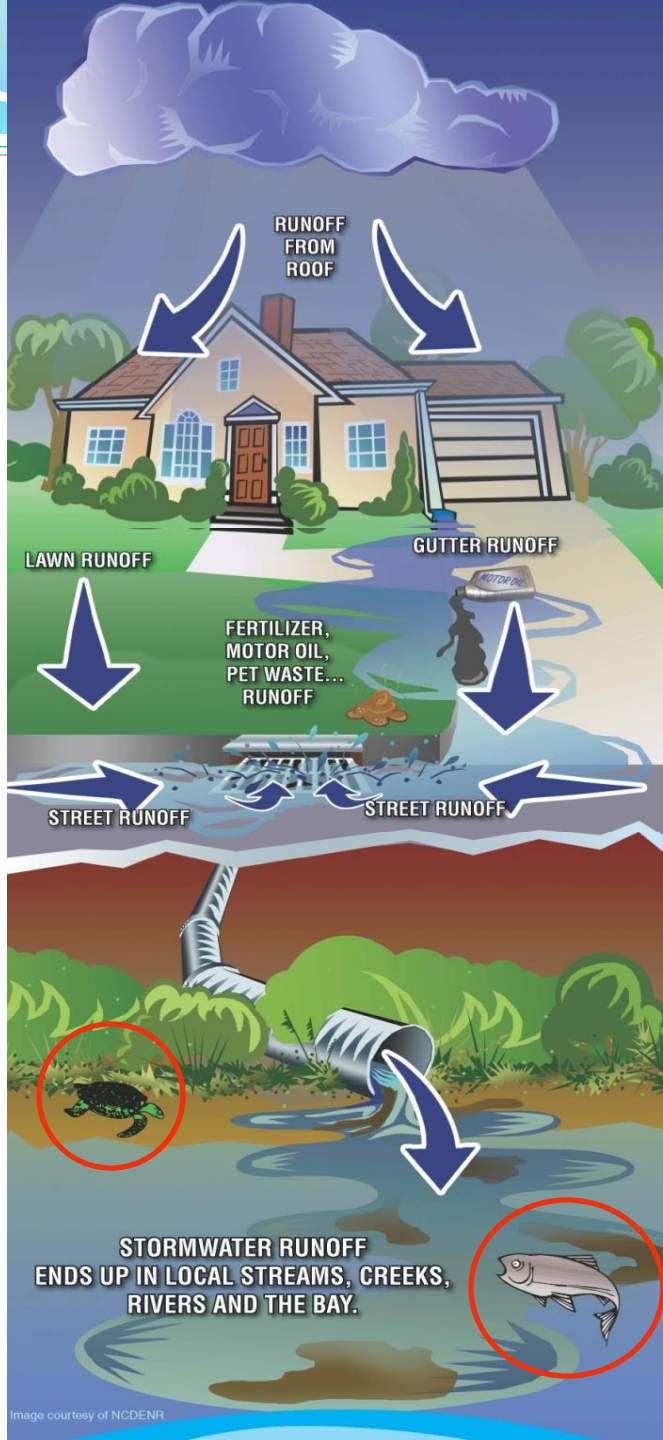
What is Runoff?

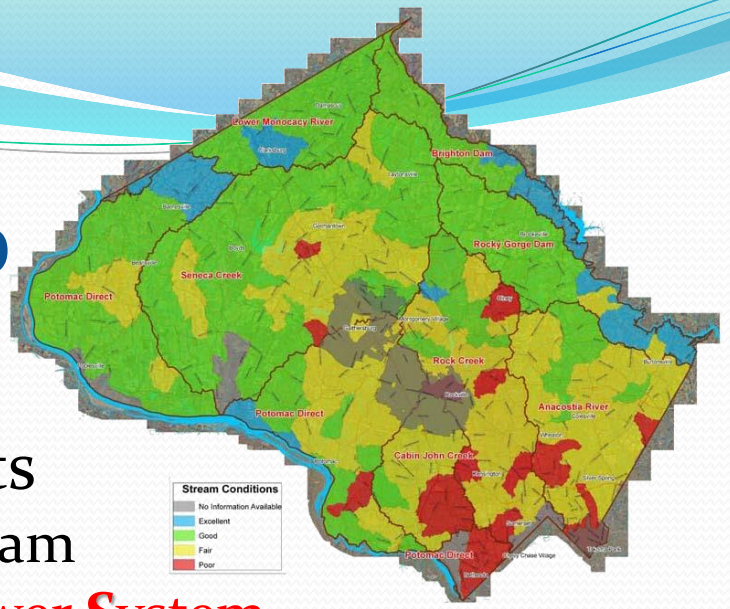
Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:

- **Directly into streams**
- **Into storm drain pipes, eventually leading to streams**
- **Into stormwater management facilities, then streams**

Two Major Issues:
Volume/Timing of Runoff
Water Quality



What is the County doing to protect our Streams?



- Must meet regulatory requirements
  - Federal Clean Water Act permit program
  - **MS4 = Municipal Separate Storm Sewer System**
- Applies to all large and medium Maryland jurisdictions
- County programs
  - Restore our streams and watersheds
    - Add runoff management
  - Meet water quality protection goals
    - Reduce pollutants getting into our streams
  - Educate and engage all stakeholders
    - Individual actions make a difference
  - Focus on watersheds showing greatest impacts

MS4 permit, what is it?

- Montgomery County is responsible for:
  - What goes into our storm drain pipes
  - What comes out of them
  - What flows into the streams
- Requires additional stormwater management for **20 percent** of impervious surfaces (4,292 acres = 6.7 square miles). That's about three times the size of Takoma Park.

That's equivalent to 3,307 football fields!

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Watershed Management Division

- Stormwater Facilities Maintenance
  - Inspections and Maintenance
- Stormwater Permit Coordination
  - Reporting, Monitoring, and Watershed Outreach
- Watershed Restoration
  - Stormwater Retrofits and Stream Restoration
  - RainScapes
- Construction Management
  - Oversees project construction
  - Administers contracts and procurement

Water Quality Protection Charge

- Part of the Montgomery County property tax bill
- Funds are used to maintain existing storm water management facilities
- Funds projects to minimize stormwater pollution, protect property and infrastructure and restore our rivers and streams

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Resources

For information such as:

- Local watershed groups

  www6.montgomerycountymd.gov/dectmpl.asp?url=/Content/dep/water/localgroups.asp

- Regional and national groups
- General information

  www.montgomerycountymd.gov/DEP

- Living a Green Life: My Green Montgomery

  http://montgomerycountymd.mygreenmontgomery.org/

Project Selection

- Improve stormwater function
- Dredging requested by North Lake Village Federation
- Riser retrofit selected by DEP to achieve MS4 goals
- Located in a key watershed (Great Seneca Creek)

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Overview of Hydraulic Dredging & Dewatering Activities

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Presented by
Walter Dinicola, P.E.

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Hydraulic Dredge

Hydraulic dredges work by sucking a mixture of bottom sediments and water from the lake. A cutterhead is a mechanical device that has rotating blades or teeth to break up or loosen the bottom sediments so that it can be pumped through the dredge.

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Booster Pump and Pipeline

Booster Pump

Dredge Pipeline

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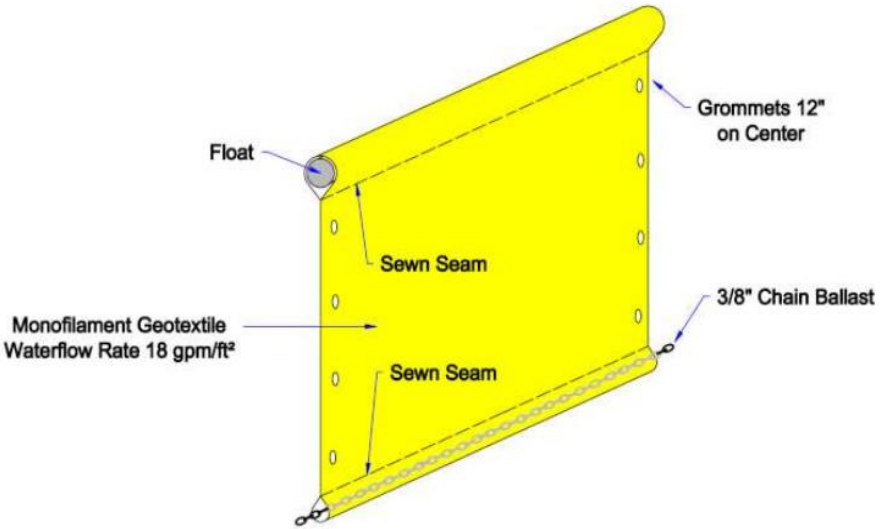
Turbidity Curtains



Turbidity is a measure of water clarity; how much material suspended in water decreases the passage of light through the water

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Hydraulic Dredging Procedure

- Underwater surveys to measure the amount of sediment to be removed
- Hydraulically remove lake bottom sediments
- Pump sediment slurry through the pipeline to the dewatering area

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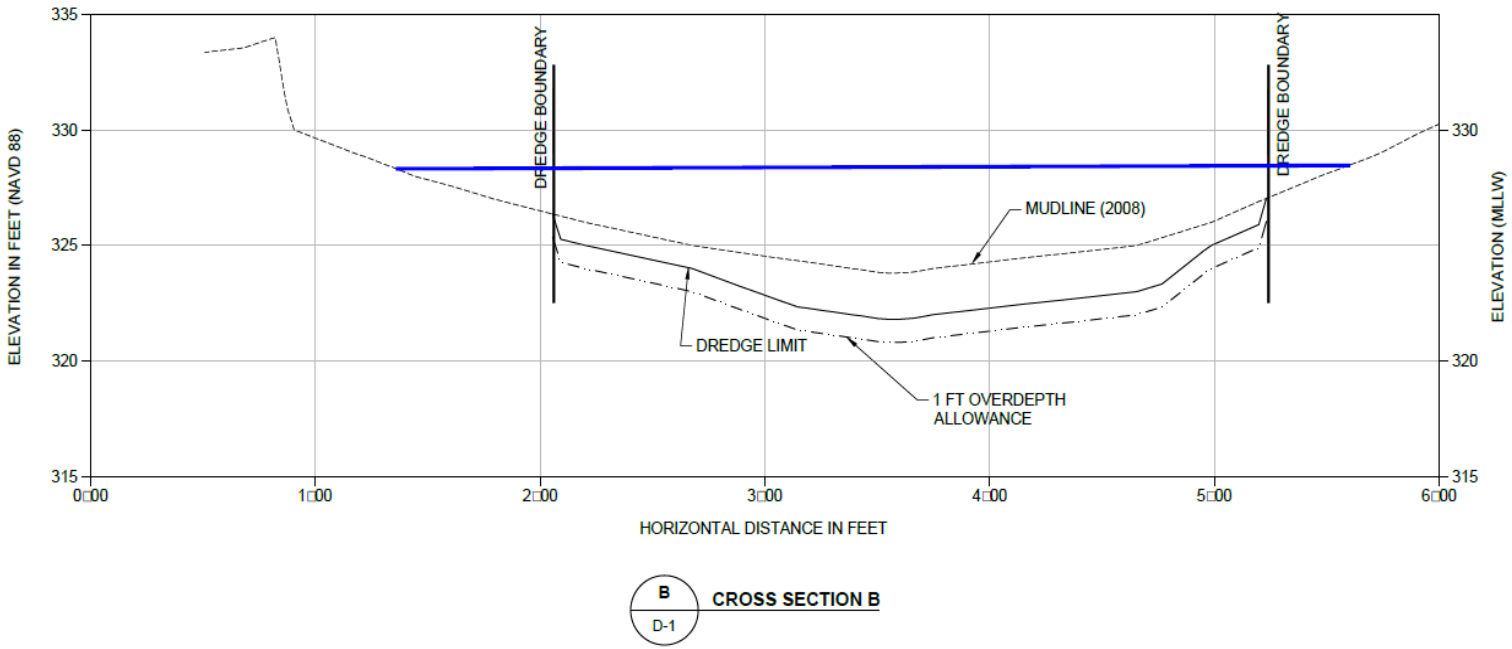
Dredged Material Volume

Remove approximately 20,000 cy of sediments within two dredge areas



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Dredged Material Dewatering Activities

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Dredged Material Dewatering Activities

Shaker screens to remove debris and larger items

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Dredged Material Dewatering Activities

Hydro Cyclones and Linear Shakers

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Dredged Material Dewatering Activities

Clarifiers (green tank in background) and (3) Belt Filter Presses

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Dredged Material Dewatering Activities

Stockpiled Dredged Material for Loading into Trucks for Transportation to Approved Disposal Facility

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Dredged Material Dewatering Activities

Dewatering Area during and after construction

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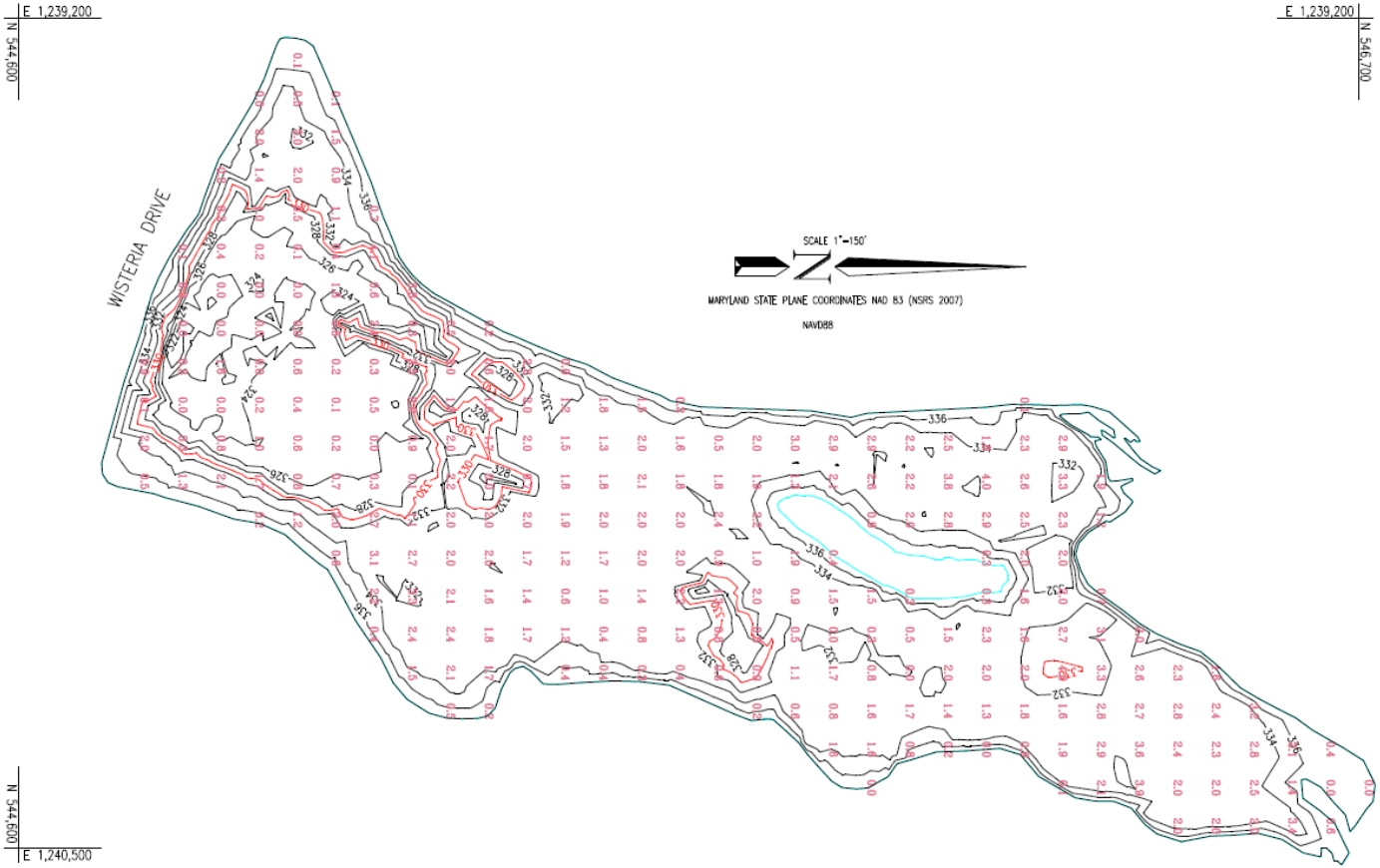
Bathymetric Survey



A Study of Sediment Depth of Gunners Lake
Performed by CPJ in November 2012

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Gunners Lake Dredging

- Project proposed to dredge approximately 20,000 cubic yards of sediments from the Lake.
- Dredging to occur in northern end of the Lake, both sides of the island.
- Dredging performed by hydraulic dredging methods.
- Approximately 2,000 truck Loads of sediment to be removed from the Lake after being Processed.

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Dredging Area– Northern End

Dredged volume is approximately 20,000 cy

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Sediment Characteristics

- In December 2011 sediments samples were taken and tested for contaminants.
- Results showed elevated levels of PAHs and metals.
- Facilities in Maryland that have permits to handle these Sediments.
  - CLEAN EARTH out of Hagerstown
  - SOILSAFE out of Brandywine.

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Sediment Characteristics

- In August 2013, 8 Sediment borings were taken from the proposed dredging location and tested for their Characteristics needed for the design of the Hydraulic dredging.
- Testing included
  - Moisture Content
  - Gradation Analysis
  - Atterberg Limits
  - Specific Gravity
- Testing to determine how easily the sediments can be pumped and dewatered.

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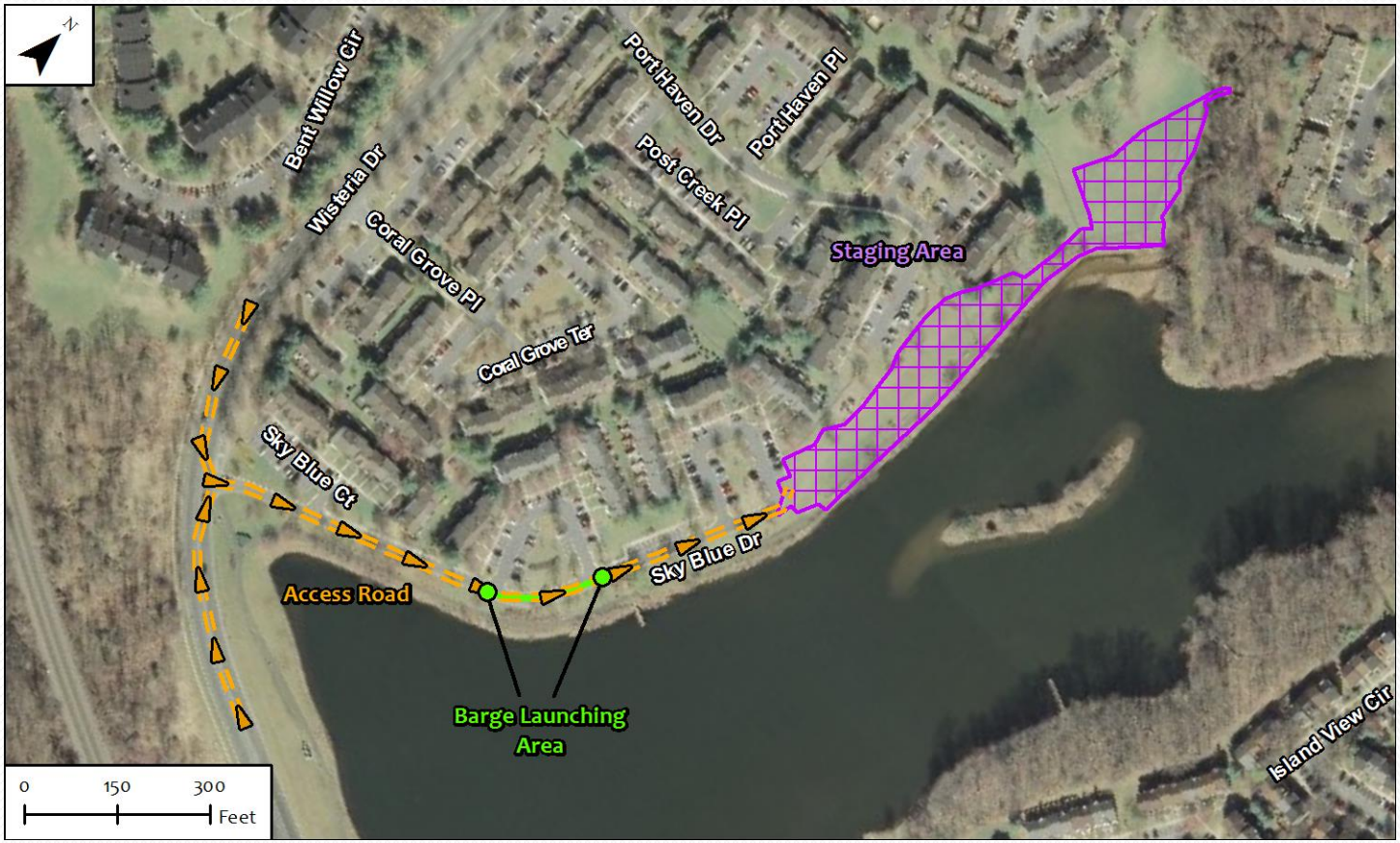
Access & Staging Area



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Truck Traffic 7:00 AM to 5:00 PM Week Days
Averaging 2 trucks/hour for a 6 month period

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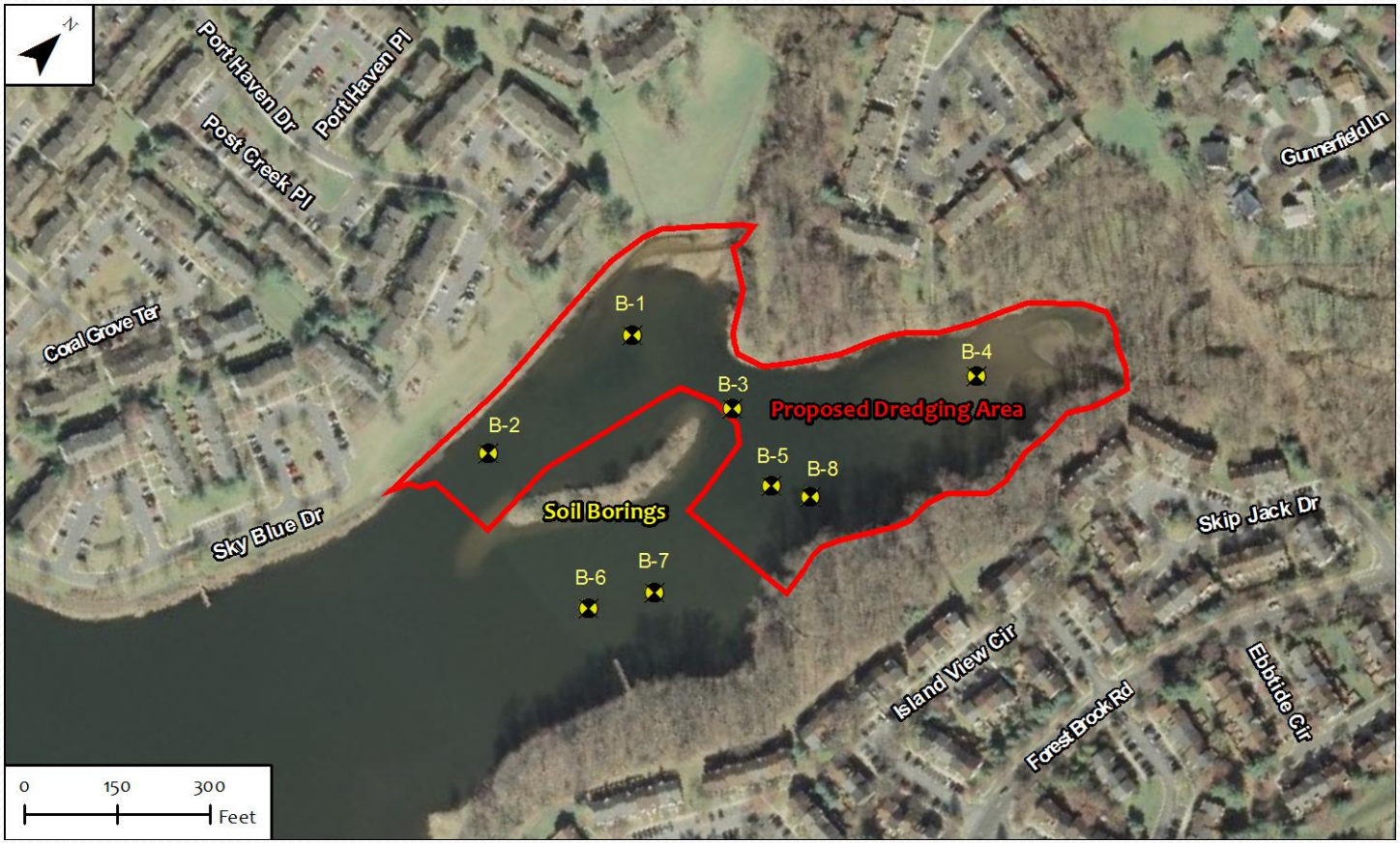
Dredging Area



Approximately 2,000 truck loads of sediment hauled away from site.

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Project Area

- Existing open area adjacent to northwest portion of lake will be graded and used for staging area and dewatering operation.
- Staging area will be used for office trailer, construction sanitary facility, and equipment storage.
- Access to site will be from Wisteria Drive onto Sky Blue Drive, to the northern terminus at the parking lot.
- A Construction Fence will be provided around entire Area
- There will be several pipes from the Dewatering Plant area going across the Path next to the Lake for the Dredging Operations.

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Restoration of Site

Dewatering Area to be restored to existing conditions after completion of the Dredging.

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Permits

- All local, state and federal permits will be obtained for this project.

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Project Impacts

- **Recreational** – Partial Closure of parking lot at end of Sky Blue Drive; impact to path around the Lake.
- **Traffic** – construction traffic enters and exits construction site, Sky Blue Drive will be shared by residents and construction trucks for the duration of the project.
- **Neighborhood** – construction and traffic noise will typically occur Monday – Friday, 7AM to 5PM

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Project Impacts

- **Environmental**
  - Some trees will be removed.
  - Turbidity – Turbidity is a measure of water clarity. Contractor is required to comply with MDE requirement on turbidity for water discharged back to lake.
  - Aquatic Biota – Minimal impact to aquatic biota in Lake

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Project Benefits

- **Environmental** – Improve storm water management function of the Lake
- **Recreation** – Aesthetics

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Tentative Dredging Schedule

- **Permit submittal** – November 2013
- **Permit approvals** – April 2014
- **Contractor Selection** –March 2014
- **Construction** – June 2015

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What to expect during dredging

- **Duration**
  - Site preparation and mobilization - approximately 1 month
  - Dredging - approximately 6 months
  - Site restoration - approximately 1 month
- **Construction Hours**
  - Monday through Friday, 7AM – 5PM; Some work may be performed after 5:00 PM or on weekends for maintenance of equipment
- **Noise**
  - Contractor is required to comply with Montgomery County Noise Ordinance.

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What to expect during dredging

- **Safety**
  - Site will be fenced for safety.
- **Traffic**
  - Impacts to traffic from trucks entering and exiting construction site during the day. Sky Blue Drive will see increased traffic volume.
- **Sediment**
  - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads

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Riser Retrofit

- Manages peak flows during frequent storm events
- Beneficial to address future stream erosion
- Minimal Construction Impacts

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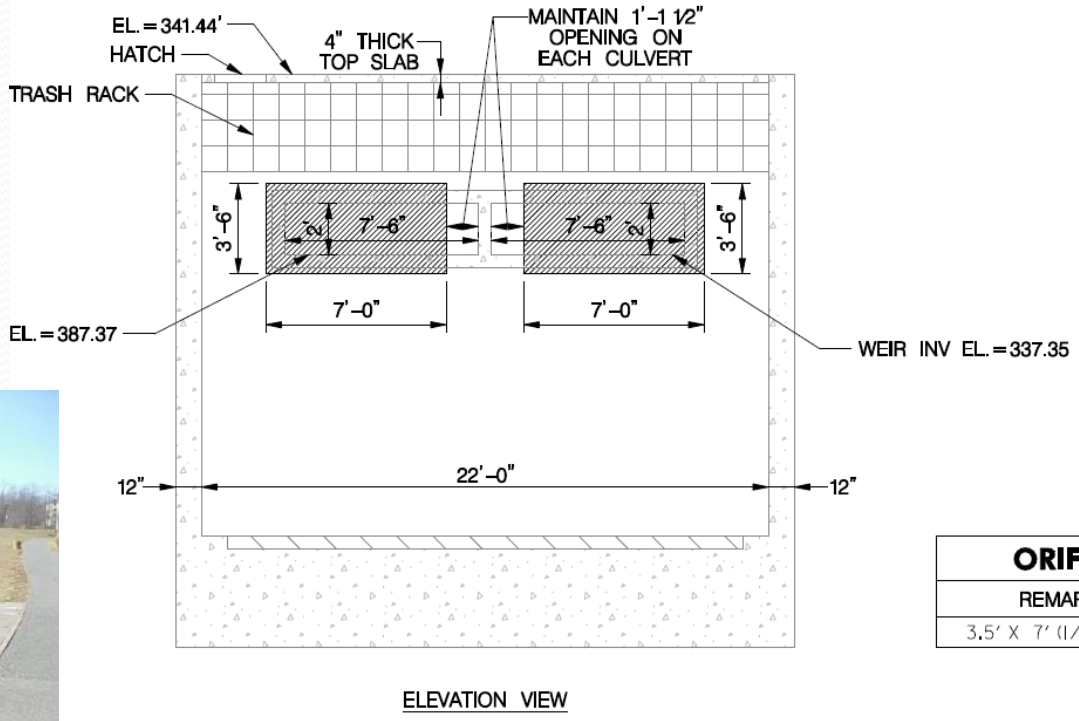
Riser Retrofit



ELEVATION VIEW

ORIFICE PLATES	
REMARKS	QTY (EA)
3.5' X 7' (1/2" THICK)	2

RISER RETROFIT DETAILS

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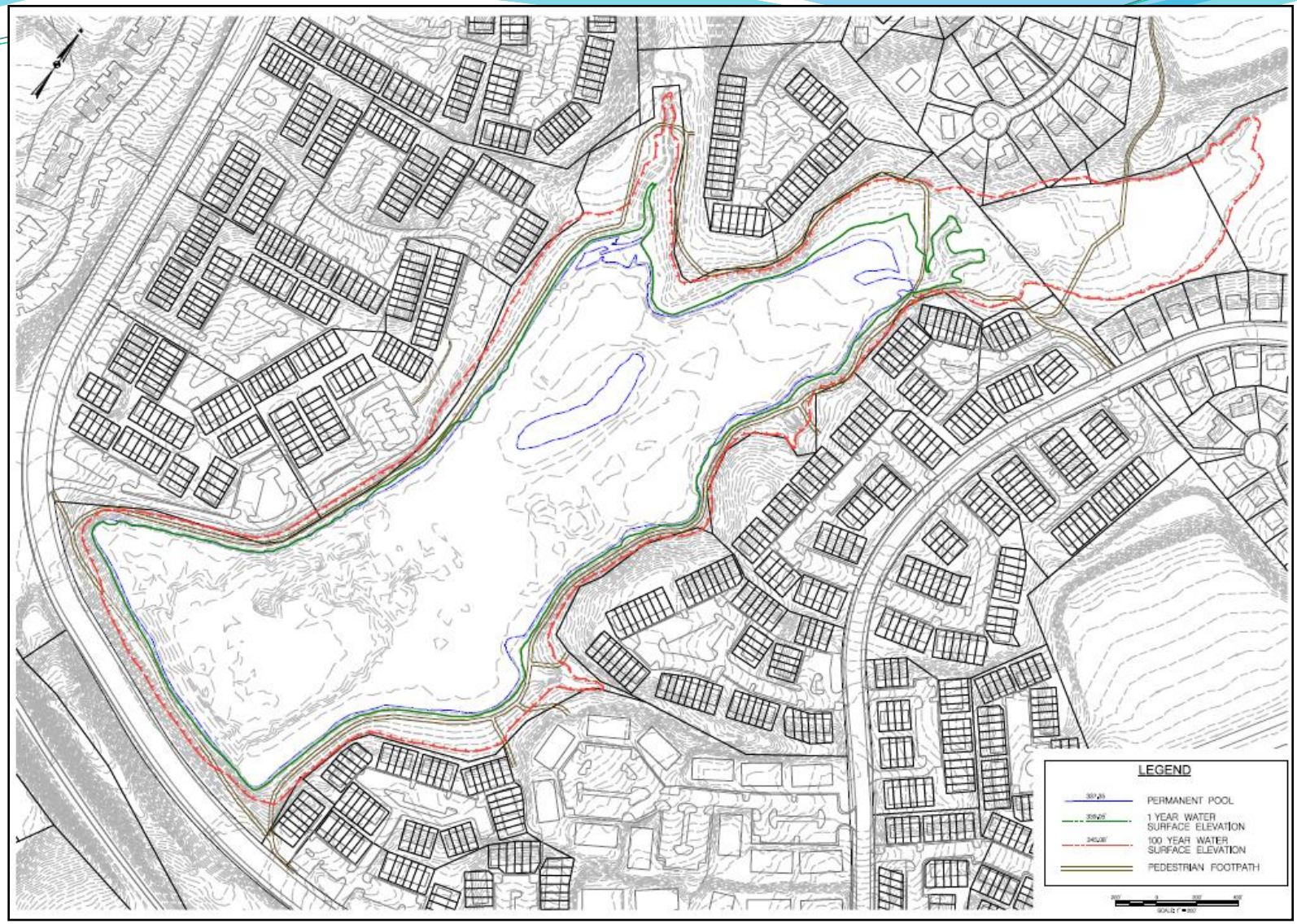

1 Year Floodplain increase = 0.01'

100 Year Floodplain increase = 0.40'

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Questions?

For more information:

Billy Whelan, 240-777-7727
william.whelan@montgomerycountymd.gov
www.montgomerycountymd.gov/stormwater

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